

Message Text

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SUBJECT: SEASAT-A

REF: A. MADRID 06462 (DTG 081735Z JUN 78)
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1. THE PURPOSE OF THIS MESSAGE IS TO BRIEFLY DESCRIBE THE
NASA SEASAT-A PROGRAM, WHICH IS AN UNCLASSIFIED SCIENTIFIC
PROGRAM, THE DEFENSE MAPPING AGENCY (DMA) COOPERATIVE ROLE
WITH NASA IN SEASAT-A, THE INVOLVEMENT OF THE EUROPEAN
COMMUNITY IN SEASAT-A AND DMA'S ACTIONS TO DATE REGARDING
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THE PROPOSED DOPPLER TRACKING STATION IN THE CANARY ISLANDS.

2. SEASAT-A IS A NASA SPACECRAFT DESIGNED AS A QUOTE PROOF
OF CONCEPT UNQUOTE MISSION TO EVALUATE THE EFFECTIVENESS OF
REMOTELY SENSING OCEANOLOGICAL AND RELATED METEOROLOGICAL
PHENOMENA FROM A SATELLITE BORNE PLATFORM IN SPACE THROUGH
UTILIZATION OF REMOTE SENSORS DEVELOPED ON PREVIOUS SPACE

AND AIRCRAFT TEST PROGRAMS. THE SEASAT-A SATELLITE, TO BE LAUNCHED IN THE JUN-JUL 78 TIMEFRAME INTO A NEAR CIRCULAR 800 KM ORBIT INCLINED AT 108 DEGREES, WILL CARRY THREE

ACTIVE RADARS AND TWO PASSIVE RADIOMETERS. THE ACTIVE SENSORS INCLUDE A PULSE COMPRESSED RADAR ALTIMETER, A MICRO-WAVE RADAR SCATTEROMETER AND A SYNTHETIC APERTURE IMAGING RADAR. PASSIVE SENSORS CONSIST OF A SCANNING MULTIFREQUENCY MICROWAVE RADIOMETER AND A VISIBLE/INFRARED SCANNING RADIO-METER.

3. THE SEASAT-A RADAR ALTIMETER, OF PRIME INTEREST TO DMA, WILL MEASURE TO A PRECISION OF 10 CENTIMETERS, THE CHANGE IN SEA SURFACE TOPOGRAPHY DUE TO GRAVITY VARIATIONS AND OCEAN TIDES, SURGES AND CURRENTS. THROUGH EXTENSIVE PROCESSING OF THE ALTIMETRY DATA AND SATELLITE TRACKING DATA OBTAINED FROM GROUND STATIONS, DMA WILL DEVELOP A DETAILED KNOWLEDGE OF THE GRAVITY FIELD AT SEA TO BE USED IN SUPPORT OF BOTH SHIPBORNE AND AIRBORNE INERTIAL NAVIGATION SYSTEMS. USE OF RADAR ALTIMETRY FROM SPACE TO DEVELOP GRAVITY INFORMATION WAS DEMONSTRATED BY THE NASA GEOS-3 SATELLITE LAUNCHED IN APR 75. THE GEOS-3 ALTIMETER HAD A PRECISION OF 60 CENTIMETERS. DMA, IN REFS B. AND C., PROPOSED AND RECEIVED APPROVAL TO TRACK GEOS-3 FROM THE CANARY ISLANDS FOR 3 MONTHS IN 1976.

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4. THE MICROWAVE RADAR SCATTEROMETER MEASURES THE FINE SCALE SEA SURFACE ROUGHNESS WHICH CAN BE CONVERTED DIRECTLY TO WIND SPEED AND DIRECTION. THE SYNTHETIC APERTURE RADAR WILL PROVIDE IMAGES OF THE OCEAN SURFACE FROM WHICH INFORMATION ON WAVE PATTERNS AND OCEAN DYNAMICS WILL BE OBTAINED.

5. THE SCANNING MULTI-SPECTRAL MICROWAVE RADIOMETER (SNMR) WILL PROVIDE ALL-WEATHER SEA SURFACE TEMPERATURES TO 1.5 DEGREES ABSOLUTE OR 1 DEGREE RELATIVE ACCURACY. THIS SENSOR WILL ALSO PROVIDE VERY HIGH SPEED WIND VELOCITIES AS WELL AS ICE MEASUREMENTS. THE SCANNING VISIBLE/INFRARED RADIOMETER WILL PROVIDE IMAGES OF VISIBLE AND THERMAL INFRARED EMISSIONS FROM THE OCEANS, COASTAL AND ATMOSPHERIC FEATURES IN SUPPORT OF THE OTHER INSTRUMENTS AND WILL HELP IDENTIFY CURRENTS AND STORMS.

6. IN ADDITION TO THE SENSORS LISTED ABOVE, SEASAT-A CONTAINS LASER RETROREFLECTORS AND A PRECISE DOPPLER OSCILLATOR TO PROVIDE FOR PRECISION TRACKING OF THE SPACECRAFT.

7. THE NASA SEASAT-A PROGRAM IS MANAGED BY MR. S. WALTER MCCANDLESS FROM NASA HEADQUARTERS, CODE ESE, WASHINGTON,

D.C. TELEPHONE (202) 755-1201.

8. THE NASA JET PROPULSION LABORATORIES IN PASADENA, CALIFORNIA, ARE RESPONSIBLE FOR THE DESIGN, CONSTRUCTION, LAUNCH AND OPERATION OF THE SEASAT-A SPACECRAFT AND FOR THE DISSEMINATION OF SPACECRAFT DATA.

9. EUROPEAN PARTICIPATION IN SEASAT-A IS BASED ON A FORMAL PROPOSAL TO NASA BY THE SEASAT USERS RESEARCH GROUP EUROPE (SURGE) COMMITTEE OF THE EUROPEAN SPACE AGENCY TO PERFORM SPECIFIC SEASAT-A EXPERIMENTS IN THE EUROPEAN AREA. THE SURGE PROPOSAL WHICH IS STILL BEING NEGOTIATED BY NASA CALLS FOR CALIBRATION EXPERIMENTS IN THE NORTH SEA AREA USING THE SEASAT-A SENSORS. INCLUDED IN THE SURGE EXPERI-
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MENT IS PROVISION FOR TRACKING THE SEASAT-A SATELLITE FROM SOME 7 LASER AND 5 DOPPLER TRACKING STATIONS LOCATED IN THE EUROPEAN AREA.

10. THE SPANISH, THOUGH NOT PARTICIPATING DIRECTLY IN THE SURGE RADAR SENSOR EXPERIMENTS ON SEASAT-A, ARE COOPERATING IN THE OPERATION OF A FRENCH LASER IN SAN FERNANDO SPAIN IN ADDITION TO THE DOPPLER STATION IN THE CANARY ISLANDS. ALL SEASAT-A DATA ACQUIRED IN EUROPE WILL BE AVAILABLE TO THE SPANISH GOVERNMENT THROUGH THE EUROPEAN SPACE AGENCY.

11. DR. PETER WILSON OF THE INSTITUT FUR ANGEWANDTE GEO-DASIE (IFAG) IN FRANKFURT, GERMANY, IS RESPONSIBLE FOR THE COORDINATION OF THE SURGE TRACKING NETWORK AND FOR THE GENERATION OF THE PRECISE ORBITS OF SEASAT-A REQUIRED FOR THE SURGE EXPERIMENTS IN EUROPE.

12. DMA PRESENTLY HAS DEPLOYED A WORLDWIDE NETWORK OF SOME 30 DOPPLER TRACKING STATIONS TO SUPPORT DOD SATELLITE TRACKING REQUIREMENTS. IN COOPERATION WITH NASA, DMA HAS AGREED TO SUPPORT THE TRACKING OF SEASAT-A WITH THE ABOVE NETWORK AND TO AUGMENT IT TO OBTAIN THE REQUIRED ACCURACY FOR THE SEASAT ORBITS (LESS THAN 1 METER GLOBALLY). TO SATISFY THE ORBITAL ACCURACY REQUIREMENT FOR SEASAT-A, A DOPPLER TRACKING STATION IS REQUIRED IN THE VICINITY OF THE CANARY ISLANDS. USE OF THE TRACKING DATA FROM THIS SITE FOR SURGE HAS BEEN COORDINATED WITH DR. WILSON, IFAG. FOR THIS STATION TO INPUT TO DMA ORBITAL COMPUTATIONS, THE DOPPLER TRACKING DATA NEEDS TO BE RECEIVED AT DMATC WITHIN 24 HOURS. REF D. REQUESTED US EMBASSY IN MADRID SUPPORT IN ARRANGING FOR AUTODIN TRANSMISSION OF CANARY ISLAND DATA.

13. DMA HAS A COOPERATIVE MC&G AGREEMENT WITH THE SPANISH
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SUPERIOR GEOGRAPHIC COUNSEL IN MADRID. UNDER THIS AGREEMENT, DMA HAS OVER THE YEARS BEEN INVOLVED IN MC&G PROGRAMS

WITH THE INSTITUTO GEOGRAPHICO NACIONAL (IGN). DR. RUDOLFO NUNEZ (TELEPHONE 233 3121), IGN DIRECTOR, WAS INFORMALLY CONTACTED IN APR 78 TO DETERMINE IF THE SPANISH COULD MAN A DOPPLER TRACKING STATION IN THE CANARY ISLANDS FOR DMA. DR. NUNEZ AGREED TO PROVIDE TWO TECHNICIANS TO MAN THE SITE IF DMA COULD PROVIDE THE PORTABLE DOPPLER EQUIPMENT. IN MAY 78, TWO SPANISH TECHNICIANS VISITED THE DMA TOPOGRAPHIC CENTER (DMATC) FOR TRAINING ON THE PORTABLE DOPPLER EQUIPMENT. THE TECHNICIANS HAVE RETURNED TO SPAIN AND ARE A-WAITING THE ARRIVAL OF THE DMA EQUIPMENT. THE PROPOSED SITE IN THE CANARIES IS WITHIN THE TENERIFE OBSERVATORY IN THE VICINITY OF SANTA CRUZ. DOD VISIBILITY UNDER THIS ARRANGEMENT WOULD BE MINIMAL. OBSERVATIONS WOULD BE MADE BY SPANISH NATIONALS, THE DATA TELEXED TO MADRID BY COMMERCIAL TELEX AND RETRANSMITTED TO THE US AND SURGE GROUP IN FRANKFURT.

14. THE FOREGOING DATA IS UNCLASSIFIED AND YOU MAY DRAW ON PARAGRAPHS 1-9 ABOVE TO DEVELOP A CONTINGENCY PRESS STATEMENT. INFORMATION IN PARAGRAPH 10 SHOULD BE COORDINATED WITH THE SPANISH AUTHORITIES IN ANY STATEMENT. CHRISTOPHER

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